



# Thoren Maxi-Miser Caging Systems

INNOVATION

PIONEERED

PERFECTED

THOREN  
CAGING  
SYSTEMS

INCORPORATED



# MAXI-MISER®

## THE ULTIMATE SYSTEM



### The Basic Concept of the *Ultimate System*

The design concept of the *Ultimate System* is to keep the room contamination out of the cage and the cage contamination out of the room (KIKO). This is achieved with the use of the following key components:

- The Maxi-Miser® (PIV) Caging System with filter covers.
- The Maxi-Miser® Mobile Change Station.
- Good Animal Husbandry Technique.

*The Ultimate System is covered under patent number 4690100.0*

*Specifications Subject To Change Without Notice.*

**THOREN  
CAGING  
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INCORPORATED

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# MAXI-MISER<sup>®</sup>

## BLOWER/FILTER MODULE



*Top Mount*

Thoren's Blower/Filter Module is a self-contained HEPA filtering unit. The units are constructed of stainless steel and are available as top mount, bottom mount and/or free standing. Top mount units can be wall or ceiling mounted.

The Blower/Filter Module is readily attachable to or detachable from the caging system. Units are equipped with dampers on both the supply and the exhaust, providing either positive or negative pressures relative to the room. All units come with detachable electrics to make washing or autoclaving possible.



*Bottom Mount*

The unit has two separate HEPA filters, (which are 99.99% efficient), one for filtering supply air and one for filtering exhaust air. The unit is capable of providing Class 100 air to the system. To extend the life of the HEPA filters, the unit is equipped with pre-filters to filter large particulates from the air before they reach the HEPA filters.

### ELECTRICAL SPECIFICATIONS

4 ampers at full load  
120 volt, single phase (240 volt available)  
60 hertz (50 hertz available)

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# THOREN CAGING SYSTEMS, INC.

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## AVAILABLE CAGE SIZES

Model #	Description	Dimensions	Floor Area
		Inches Centimeters	Square Inches Square Centimeters
1	Small Mouse Cage	7.70 x 12.17 x 5.250 19.56 x 30.91 x 13.34	67.6 435.7
2	Weaning Cage	12.125 x 12.125 x 5.625 30.80 x 30.80 x 14.29	112.9 727.8
3	Duplex Cage	12.125 x 12.125 x 5.53 ( two compartments) 30.80 x 30.80 x 14.05	51.7 333.6
4	Rat Cage	12.125 x 12.125 x 7.370 30.80 x 30.80 x 18.72	115.1 742.4
5	Expanded Small Mouse Cage	8.75 x 12.125 x 6.395 22.2 x 30.80 x 16.24	78.1 503.7
6	Large Rat Cage	12.125 x 23.375 x 9.00 30.80 x 59.37 x 22.86	216.0 1,393.2
7	Single Rat Cage	8.75 x 12.125 x 8.750 30.80 x 22.23 x 22.23	73.3 474.3
8	Expanded Rat Cage	12.125 x 16.00 x 9.00 30.80 x 40.60 x 22.23	146.5 944.9
9	Small Mouse II Cage	7.70 x 12.17 x 5.875 19.56 x 30.92 x 14.93	67.0 435.7
10	Large Mouse Cage	12.125 x 16.00 x 6.250 30.80 x 40.60 x 15.88	152.7 984.9
11	Duplex II Cage	12.125 x 12.125 x 6.395 ( two compartments) 30.80 x 30.80 x 16.24	51.7 333.6
15	Single Mouse Duplexed Cage	8.75 x 12.125 x 6.395 ( two compartments) 22.2 x 30.80 x 16.24	33.0 212.9
19	Small Mouse III Cage	7.75 x 13.625 x 5.675 19.56 x 34.70 x 14.41	78.0 503.7

To achieve cage interchangeability, vertical spacing of the shelves must accommodate the deepest cage.

### \*\*AUTOMATIC WATERING SYSTEMS ASK FOR SPECIAL CAGE INFORMATION

Note 1 - Model# 2, 3, 4 and 11 are interchangeable ( when # 4 rack is ordered )

Model# 5, 15 and 7 are interchangeable ( when # 7 rack is ordered)

Model# 1 and 9 are interchangeable ( when # 9 rack is ordered )

Model# 8 and 10 are interchangeable ( when # 8 rack is ordered )

Note 2 - Sizes are average approximate dimensions. Dimensional variance will be caused by differential shrinkage dependant upon specific resins.

Note 3 - Floor Area is measured with ½" bedding or a wire bar floor in the cage.

Note 4 - The ability to interchange cages is based on bottle water only, for automatic watering ask for details.

# PRODUCT MODEL NUMBER INFORMATION

Thoren Caging's model numbers are determined in the following manner. The first thing you will need to do when ordering a Thoren unit, is to determine the type of rack system you require. Our model numbers are specified as follows:

- First Number: Cage Model Number
- Second Number: No. of Cage Positions in the Rack
- Third Number: No. of Shelves in the Rack
- Fourth Number: No. of Cages Per Shelf

Once you have selected the cage size you need, represented by the model number listed, you will need to complete the number by selecting one item from each of the following three categories.

## METHOD OF WATERING

1. Bottle Watering
2. Automatic Watering - we offer both Edstrom Industries and S.E. Lab Group Automatic Watering Systems.

### Options:

- A. Standard Valve
- B. Bedding Resistant Valve
- C. Quick Disconnect Valve

## MATERIAL OF CONSTRUCTION

3. Aluminum - fixed systems.
4. Stainless Steel

## METHOD OF SUPPLY/EXHAUSTED AIR

5. HEPA Filter/Blower Module

### Options:

- A. TM - Top Mounted
  - B. BM - Bottom Mounted
  - C. FS - Free Standing
6. Transition for Central HVAC Connection
  7. Hybrid Transition with HEPA Supply - HVAC Exhaust

Example for Completion of Model Number:

Cage Selection	No. of Positions	No. of Shelves	No. Cages Per Shelf	Watering Method	Material of Construction	Air Source
9	- 140	- 10	- 14	- 1	- 4	- 5 <sup>TM</sup>

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# MAXI-MISER<sup>®</sup>

## ADVANTAGES

- Minimizes the amount of energy needed to achieve the desired environment for each cage occupant.
- Allows the housing of more animals per square foot of floor space, utilizing Thoren Space Saver Cages.
- Offers a better working environment for allergy sensitive staff members.
- Inhibits the transmission of airborne diseases between cages.
- Enables different species to be housed in the same room.
- Significantly reduces infant diarrhea and animal mortality as a result of the improved air environment.
- There are no locks, latches, or moving parts at the cage level of the ULTIMATE SYSTEM, greatly reducing the need for maintenance personnel in the barrier.



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# MAXI-MISER®

## FEATURES

- Modular design allows either a mobile or fixed system with rack height and shelf length to suit your specific requirements.
- Reduces ammonia and CO2 build-up within the cage.
- Quick disconnect clamps allow easy disassembly for cleaning and sterilization.
- Available with automatic watering system, bottle watering or a combination of both.
- 13 different cage sizes are available to fit all of your caging requirements.
- Magnehelic® gauges monitor static air pressure for both the supply air and the exhaust air.
- System is entirely autoclavable except electric components and Magnehelic® gauges.
- Provides Pressurized Individual Ventilation (PIV) to each cage.

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# MAXI-MISER®

## PRESSURIZED INDIVIDUALLY VENTILATED CAGING SYSTEMS

Thoren Caging Systems, Inc. developed the Maxi-Miser®, Pressurized Individually Ventilated (PIV) System in conjunction with The Jackson Laboratory in 1978. (Thoren Caging Systems, Inc. is the successor to Thoren Industries, who pioneered the development of the warm surfaced plastic cage in 1953.)

The Maxi-Miser® System provides pressurized individual ventilation to each cage position. This truly unique system not only supplies HEPA filtered air directly into each cage but also exhausts and filters spent air, animal odors, dander, and feed dust directly from each cage. The system maintains a superior micro-environment in each individual cage. It also gives relief to allergy sensitive staff members by providing a cleaner work environment.

Although the Maxi-Miser® PIV System was originally developed and introduced as a fixed system, it soon became apparent that a mobile unit was necessary, and in 1979 an aluminum mobile unit was completed. In 1982, an all stainless steel unit was introduced. Over the past two decades, the Maxi-Miser® System has progressed and developed into the complete caging system it is today-offering a wide variety of options and cage configurations, including wash rack equipment.

Modular in design, the Maxi-Miser® System can be constructed as a mobile or fixed unit. All units are available with automatic watering systems, bottle watering or a combination of both.

Maxi-Miser® can be operated either from the central ventilating system in your facility or it can be connected to Thoren's Blower/Filter Module. This self-contained unit has 99.99% efficient HEPA filters and contains dampers on both the supply module and the exhaust module. Units provide either positive or negative pressure relative to the room, and are equipped with separate Magnehelic® gauges to monitor static air pressure on both the supply and exhaust systems.

All Mobile Maxi-Miser® Cage Systems are constructed of stainless steel. Standard on all Thoren Systems are quick disconnect clamps, allowing easy removal of shelves and plenum plates for cleaning. The entire system is autoclavable. Even the Blower/Filter Module comes with detachable electrics to facilitate washing and/or autoclaving.



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# MAXI-MISER®

## SMALL MOUSE CAGE RACKS



Model Number 9-126-9-14-1-4-5BM

Small Mouse Cage Dimensions

7.70"W x 12.17"L x 5.875" D

19.56cm x 30.92cm x 14.93cm

Thoren Caging's Small Mouse Cage Racks are designed to allow maximum density housing of mice. Racks are built either as a mobile or fixed system. For ease in mobility, stainless steel casters are provided with grease fittings and wheel locks.

Mobile racks are a maximum of 10 shelves, with 14 cages per shelf, total accommodations-140 cages. Fixed systems can accommodate a maximum of 168 cages per section. Racks have a maximum of 12 shelves and contain 14 cages per shelf – 7 cages on each side. Either unit may be reduced in length and height to suit your specific needs (see dimensions on reverse side for more details on rack sizes).



\* Cage Capacity determined by weight of animals.

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## SMALL MOUSE CAGE RACK DIMENSIONS

Dimensions are for mobile systems only. For fixed systems please see sheet of fixed systems.

Model No.	No. Cages In Rack	No. Shelves In Rack	No. Cages In Shelf	Width	Length	Height*
9-40-5-8	40	5	8	28	42	46
9-60-6-10	60	6	10	28	51	53
9-80-8-10	80	8	10	28	51	67
9-96-8-12	96	8	12	28	59	67
9-108-9-12	108	9	12	28	59	74
9-112-8-14	112	8	14	28	68	67
9-120-10-12	120	10	12	28	59	81
9-126-9-14	126	9	14	28	68	74
9-140-10-14	140	10	14	28	68	81

\* Height does not include Blower modules.



*Model #9*

*Small Mouse II Cage*

7.70"W x 12.17"L x 5.875"D

19.56cm x 30.92cm x 14.93cm

Cage Capacity: 4 to 11 mice



*Model #1*

*Small Mouse Cage*

7.70"W x 12.17"L x 5.250"D

19.56cm x 30.91cm x 13.34cm

Cage Capacity: 4 to 11 mice

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# AVAILABLE CAGES

 SMALL MOUSE CAGE (#1)  
7.75" X 12.125" X 5"

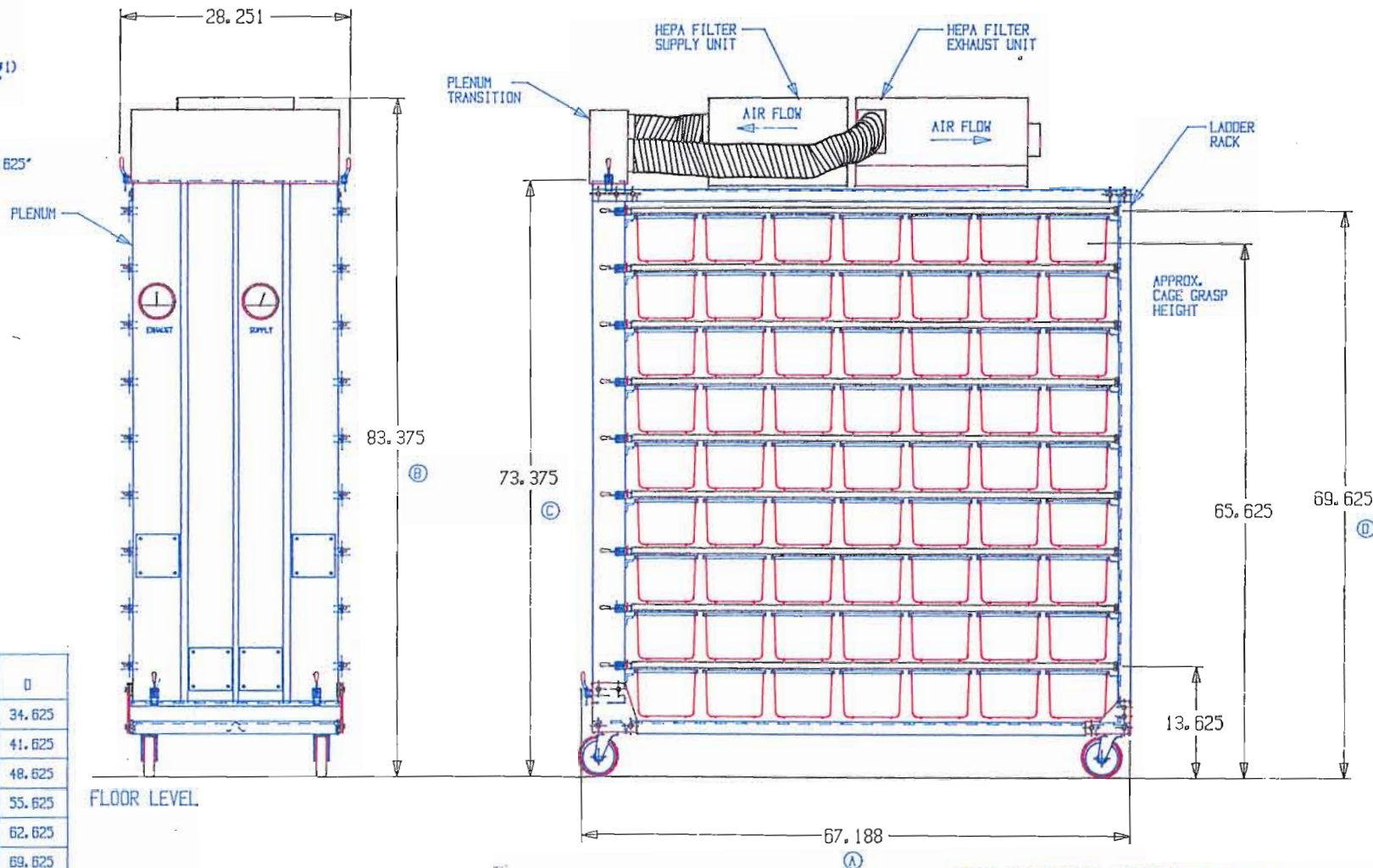
 MOUSE CAGE (#9)  
7.75" X 12.125" X 5.625"

## LENGTH

NUMBER OF CAGES LONG	A
4	42.062
5	50.438
6	58.812
7	67.188

## HEIGHT

NUMBER OF SHELVES HIGH	B	C	D
4	48.375	36.375	34.625
5	55.375	45.375	41.625
6	62.375	52.375	48.625
7	69.375	59.375	55.625
8	76.375	66.375	62.625
9	83.375	73.375	69.625



TOTAL NUMBER OF MOUSE CAGES: 126

THOREN CAGING SYSTEMS INCORPORATED  
815 WEST SEVENTH STREET  
HAZLETON PENNSYLVANIA, 18201

MAXI-MISER MOBILE SYSTEM  
MODEL # 9-126-9-14-1-4-5TM  
(TOP MOUNT BLOWER BOX)

DRAWN BY DRP  
CHECKED BY

SCALE  
DATE 21-NOV-95

DRAWING NO.  
1537

# AVAILABLE CAGES



SMALL MOUSE CAGE (#1)  
7.75" X 12.125" X 5"



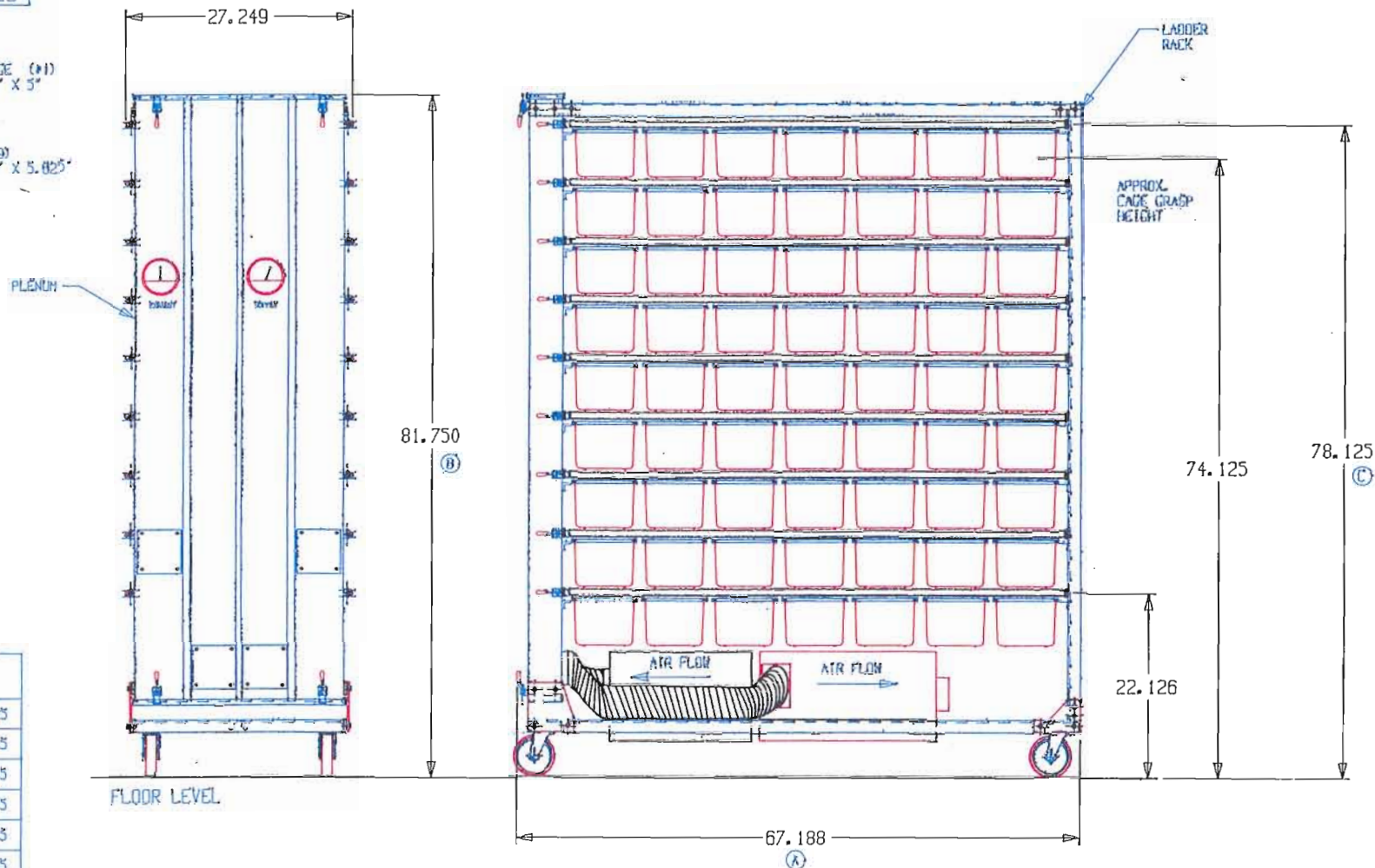
MOUSE CAGE (#9)  
7.75" X 12.125" X 5.825"

## LENGTH

NUMBER OF CAGES LONG	A
4	42.000
5	50.438
6	58.812
7	67.188

## HEIGHT

NUMBER OF SHELVES HIGH	B	C
4	48.750	43.125
5	53.750	50.125
6	60.750	57.125
7	67.750	64.125
8	74.750	71.125
9	81.750	78.125



THOREN CASTING SYSTEMS INCORPORATED  
815 WEST SEVENTH STREET  
HAZZLETON PENNSYLVANIA, 18201

MAXI-MISER MOBILE SYSTEM  
MODEL # 9-126-9-14-1-4-5BM  
(BOTTOM MOUNT BLOWER BOX)

DRAWN BY ORP  
CHECKED BY

SCALE  
DATE 21-NOV-95

DRAWING NO.  
1538



# MAXI-MISER<sup>®</sup>

## RAT, WEANING AND DUPLEX CAGE RACKS

Thoren Caging Systems Rat, Weaning and Duplex Cage Racks are three different caging systems, designed for maximum density housing of mice and rats. These systems have the same basic frame and design. When you have one system, you have the potential for all three cage systems. The reason this is possible is, because the cages have the same outer dimensions and are interchangeable within the rack. All four styles can be constructed as either a mobile or fixed unit.

Mobile Rat Cages Systems accommodate a maximum of 70 cage positions, utilizing 7 shelves with up to 10 cages per shelf. The fixed Rat Caging Systems provide a maximum of 90 cage positions for a single section or 180 positions in a double rack. Racks have a maximum of 9 shelves and contain 10 cage positions per shelf, 5 cages on a side.

Weaning Cages are for housing large numbers of weanling mice, while the Duplex Cages are ideal for breeding or housing single mice.

Mobile Weaning and Duplex Caging Systems accommodate 80 cage positions, utilizing 8 shelves, with 10 cages per shelf – 5 cages per side. Fixed Weaning and Duplex Cage Systems provide a maximum of 120 cage positions per section or 240 positions in a double rack. Racks have a maximum of 12 shelves and contain 10 cages per shelf – 5 cages on each side.

Many other cage configurations are available, (see dimensions on reverse side of more details).



*Model #2*

*Weaning Cage*

*12.125"W x 12.125"L x 5.625"D*

*30.80cm x 30.80cm x 14.29cm*

*Cage Capacity: 7 to 18 mice*



*Model #3*

*Duplex Cage*

*12.125"W x 12.125"L x 5.53"D*

*30.80cm x 30.80cm x 14.05cm*

*Cage Capacity: 3 to 8 mice per side*



*Model #4*

*Rat Cage*

*12.125"W x 12.125"L x 7.370"D*

*30.80cm x 30.80cm x 18.72cm*

*Cage Capacity: 1 to 6 rats*



*Model #11*

*Duplex II Cage*

*12.125"W x 12.125"L x 6.395"D*

*30.80cm x 30.80cm x 16.24cm*

*Cage Capacity: 3 to 8 mice per side*

*Specifications Subject To Change Without Notice.*

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## WEANING CAGE RACK DIMENSIONS

Model No.	No. Cages In Rack	No. Shelves In Rack	No. Cages In Shelf	Width	Length	Height*
2-30-5-6	30	5	6	28	47	48
2-56-7-8	56	7	8	28	60	63
2-64-8-8	64	8	8	28	60	71
2-80-8-10	80	8	10	28	73	71

## DUPLEX CAGE RACK DIMENSIONS

Model No.	No. Cages In Rack	No. Shelves In Rack	No. Cages In Shelf	Width	Length	Height*
3-30-5-6	30	5	6	28	47	48
3-56-7-8	56	7	8	28	60	63
3-64-8-8	64	8	8	28	60	71
3-80-8-10	80	8	10	28	73	71

## RAT CAGE RACK DIMENSIONS

Model No.	No. Cages In Rack	No. Shelves In Rack	No. Cages In Shelf	Width	Length	Height*
4-30-5-6	30	5	6	28	47	53
4-36-6-6	36	6	6	28	47	62
4-42-7-6	42	7	6	28	47	70
4-48-6-8	48	6	8	28	60	53
4-56-7-8	56	7	8	28	60	70
4-70-7-10	70	7	10	28	73	70

## DUPLEX II CAGE RACK DIMENSIONS

Model No.	No. Cages In Rack	No. Shelves In Rack	No. Cages In Shelf	Width	Length	Height*
11-30-5-6	30	5	6	28	47	48
11-56-7-8	56	7	8	28	60	63
11-64-8-8	64	8	8	28	60	71
11-80-8-10	80	8	10	28	73	71

\* Height does not include Blower modules.



# AVAILABLE CAGES

MEANING CAGE (#2)  
12.125" X 12.125" X 3.25"

DUPLEX CAGE (#3)  
12.125" X 12.125" X 3.25"  
(TWO COMPARTMENTS)

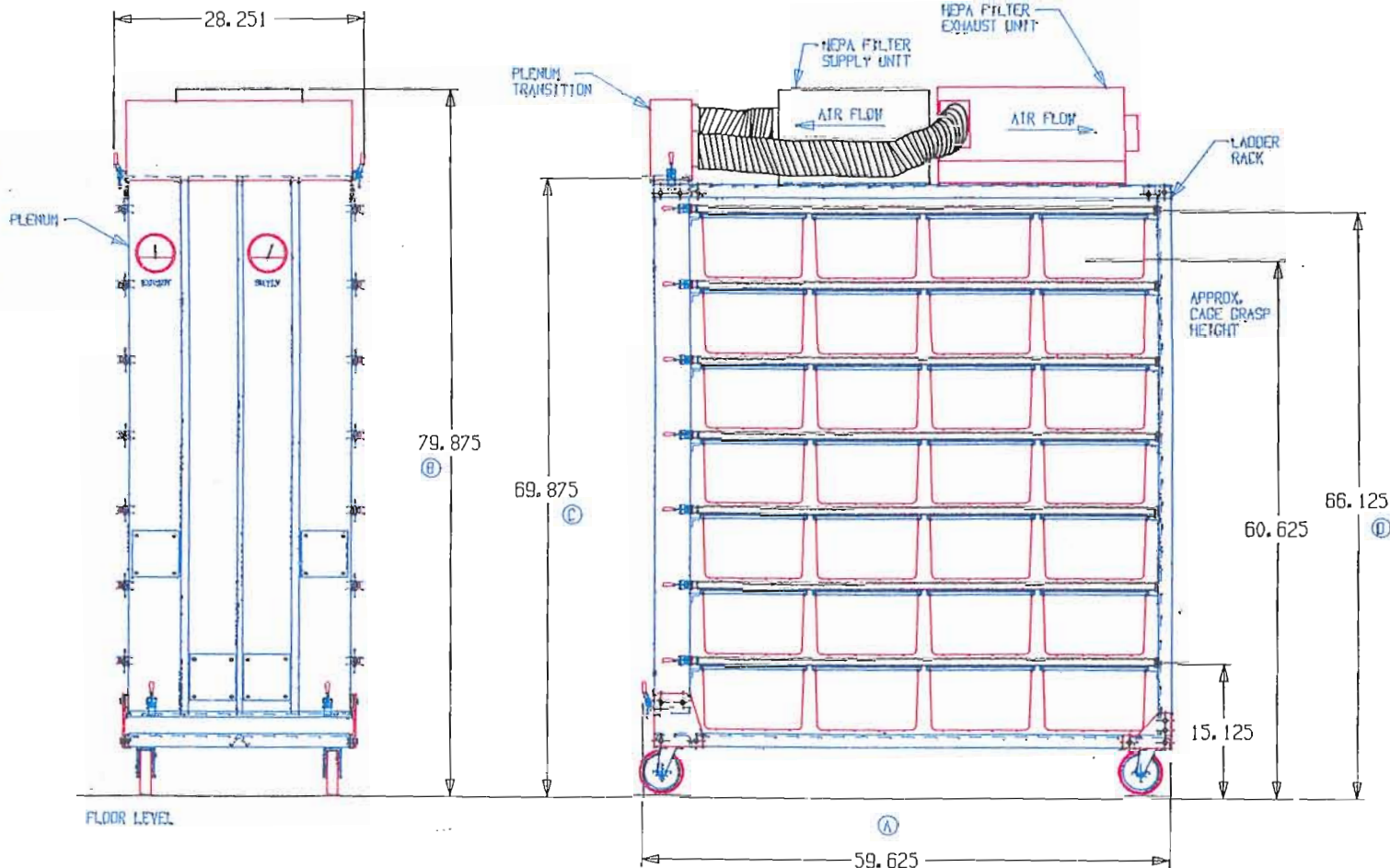
RAT CAGE (#4)  
12.125" X 12.125" X 7.25"

## LENGTH

NUMBER OF CAGES LONG	A
3	46.812
4	58.625
5	72.438

## HEIGHT

NUMBER OF SHELVES HIGH	B	C	D
4	34.375	44.375	40.825
5	82.875	52.875	49.125
6	71.375	81.375	57.825
7	79.875	89.875	66.125



TOTAL NUMBER OF RAT CAGES: 56

THOREN CAGING SYSTEMS INCORPORATED  
815 WEST SEVENTH STREET  
HAZLETON PENNSYLVANIA, 18201

HAXI-MISER MOBILE SYSTEM  
MODEL # 4-58-7-8-1-4-5TM  
(TOP MOUNT BLOWER BOX)

DRAWN BY DRP  
CHECKED BY

SCALE  
DATE 21-NOV-95

DRAWING NO.  
1512

# AVAILABLE CAGES

MEATING CAGE (#2)  
12.125" X 12.125" X 5.25"

DUPLEX CAGE (#3)  
12.125" X 12.125" X 5.25"  
(TWO COMPARTMENTS)

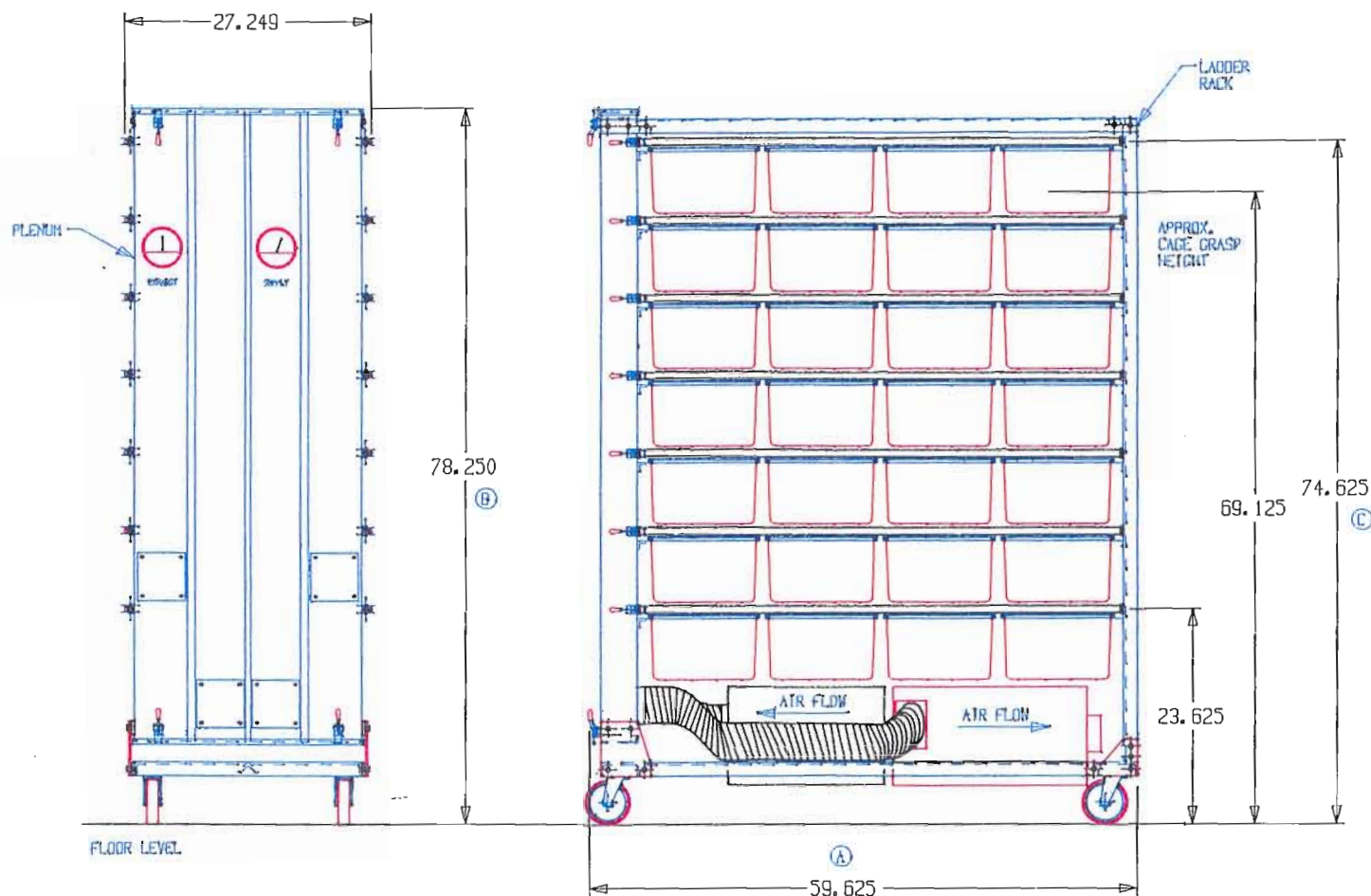
RAT CAGE (#4)  
12.125" X 12.125" X 7.25"

## LENGTH

NUMBER OF CAGES LONG	A
3	46.812
4	58.825
5	72.438

## HEIGHT

NUMBER OF SHELVES HIGH	B	C
4	52.750	49.125
5	61.250	57.625
6	69.750	66.125
7	78.250	74.625



TOTAL NUMBER OF RAT CAGES: 56

THOREN CAGING SYSTEMS INCORPORATED  
815 WEST SEVENTH STREET  
HAZLETON PENNSYLVANIA, 18201

MAXI-MISER MOBILE SYSTEM  
MODEL # 4-56-7-8-1-4-SBM  
(BOTTOM MOUNT BLOWER BOX)

DRAWN BY ORP  
CHECKED BY

SCALE  
DATE 21-NOV-95

DRAWING NO.  
1513



# MAXI-MISER®

## EXPANDED SMALL MOUSE, SINGLE MOUSE AND SINGLE RAT CAGE RACKS

Thoren Caging's Expanded Small Mouse, Single Mouse and Single Rat Cage Racks have been designed to allow the end user the flexibility of interchanging the cages in the unit. These systems have the same basic frame and design, when you have one system you have the potential for all these. The reason this is possible is, because the cages have the same outer dimensions and are interchangeable within the rack. All styles can be constructed as either a fixed or mobile unit.

Depending on the style of rack system you select the mobile cage system accommodates a maximum of 140 cage positions, utilizing 10 shelves and up to 14 cages per shelf. The fixed cage system provides a maximum of 140 cage positions for a single section, or 280 positions in a double rack. Racks have a maximum of 10 shelves and contain 14 cage positions per shelf, 7 cages on a side.

Any of these rack systems can be reduced in length and height to suit your specific needs (see dimensions on reverse side for more details on rack sizes).



*Model #5*

*Expanded Small Mouse Cage*

*8.75"W x 12.125"L x 6.395"D*

*22.2cm x 30.80cm x 16.24cm*

*Cage Capacity: 5 to 13 mice*



*Model #7*

*Single Rat Cage*

*8.75"W x 12.125"L x 8.750"D*

*30.80cm x 22.23cm x 22.23cm*

*Cage Capacity: 1 to 4 rats*



*Model #15*

*Single Mouse Cage*

*8.75"W x 12.125"L x 6.395"D*

*30.80cm x 22.23cm x 16.24cm*

*Cage Capacity: 1 to 2 mice per side*

*Specifications Subject To Change Without Notice.*

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## EXPANDED SMALL MOUSE CAGE

Model No.	No. Cages In Rack	No. Shelves In Rack	No. Cages In Shelf	Width	Length	Height*
5-40-5-8	40	5	8	28	47	48
5-80-8-10	80	8	10	28	56	71
5-96-8-12	96	8	12	28	65	71
5-112-8-14	112	8	14	28	73	71
5-126-9-14	126	9	14	28	73	79
5-140-10-14	140	10	14	28	73	85

## SINGLE RAT CAGE RACK

Model No.	No. Cages In Rack	No. Shelves In Rack	No. Cages In Shelf	Width	Length	Height*
7-70-7-10	70	7	10	28	56	81

## SINGLE MOUSE CAGE

Model No.	No. Cages In Rack	No. Shelves In Rack	No. Cages In Shelf	Width	Length	Height*
15-40-5-8	40	5	8	28	47	48
15-80-8-10	80	8	10	28	56	71
15-96-8-12	96	8	12	28	65	71
15-112-8-14	112	8	14	28	73	71
15-126-9-14	126	9	14	28	73	79
15-140-10-14	140	10	14	28	73	85

*\* Height does not include Blower modules.*



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# AVAILABLE CAGES



EXPANDED SMALL MOUSE CAGE (#5)  
8.75" X 12.125" X 6.25"



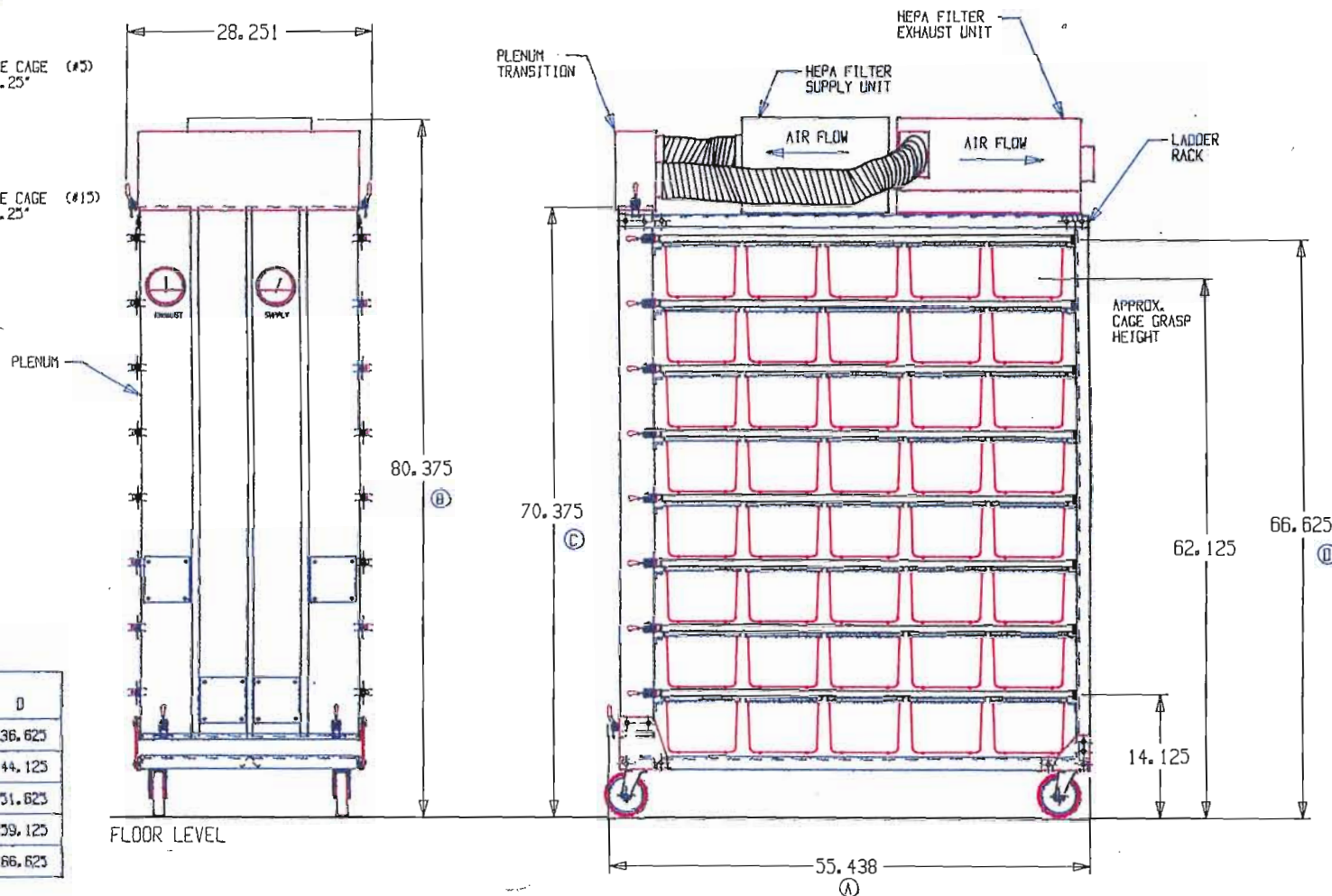
DUPLEXED SMALL MOUSE CAGE (#15)  
8.75" X 12.125" X 6.25"  
(TWO COMPARTMENTS)

## LENGTH

NUMBER OF CAGES LONG	A
3	36.688
4	46.062
5	55.438
6	64.812

## HEIGHT

NUMBER OF SHELVES HIGH	B	C	D
4	50.375	40.375	36.625
5	57.875	47.875	44.125
6	65.375	55.375	51.625
7	72.875	62.875	59.125
8	80.375	70.375	66.625



THOREN CAGING SYSTEMS INCORPORATED  
815 WEST SEVENTH STREET  
HAZLETON PENNSYLVANIA, 18201

MAXI-MISER MOBILE SYSTEM  
MODEL # 5-80-8-10-1-4-5TM  
(TDP MOUNT BLOWER BOX)

DRAWN BY DRP  
CHECKED BY

SCALE  
DATE 21-NOV-95

DRAWING NO.  
1517

# AVAILABLE CAGES



EXPANDED SMALL MOUSE CAGE (#3)  
8.75" X 12.125" X 6.25"



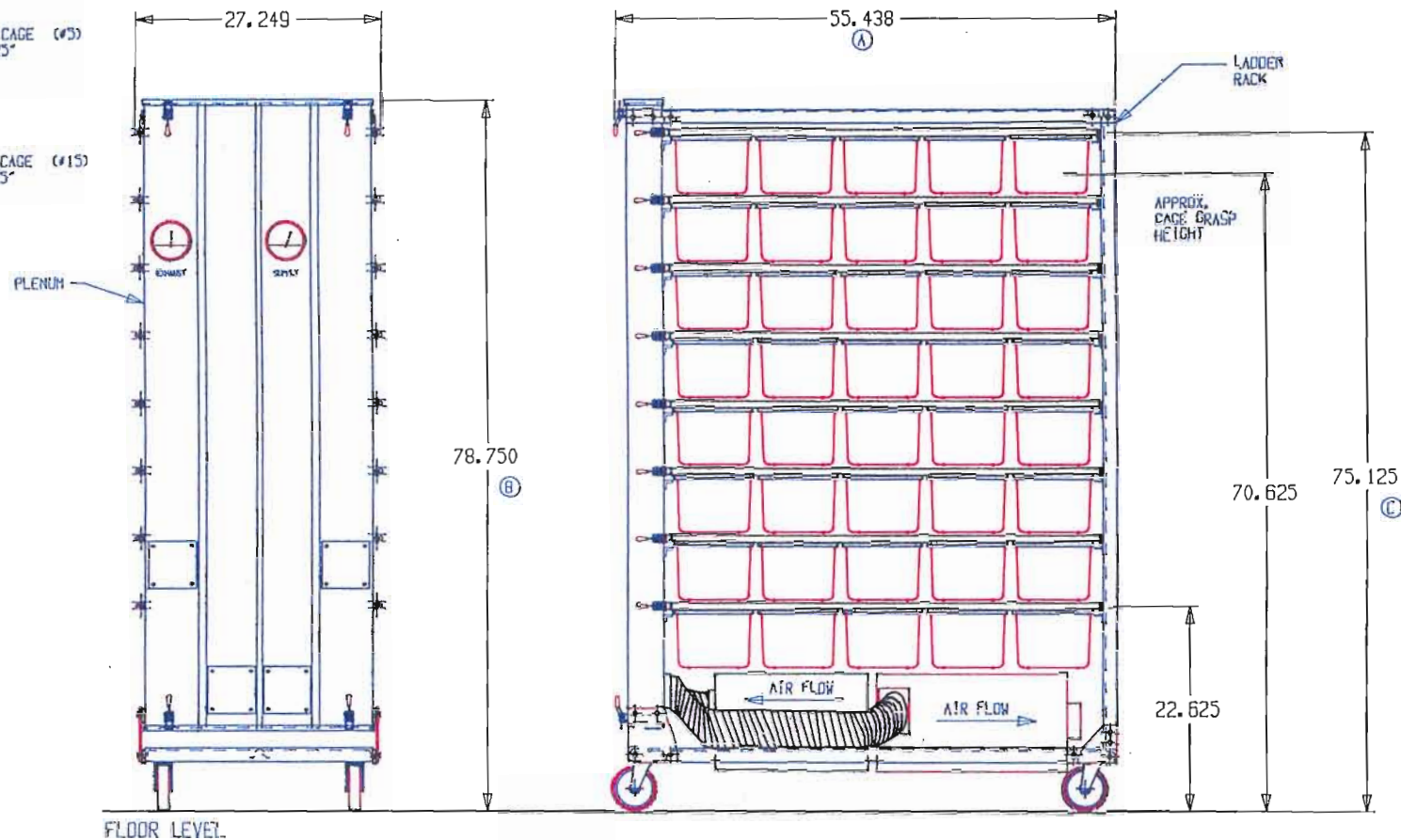
DUPLEXED SMALL MOUSE CAGE (#15)  
8.75" X 12.125" X 6.25"  
(TWO COMPARTMENTS)

## LENGTH

NUMBER OF CAGES LONG	A
3	36.888
4	46.062
5	55.438
6	64.812

## HEIGHT

NUMBER OF SHELVES HIGH	B	C
4	48.750	45.125
5	56.250	52.625
6	63.750	60.125
7	71.250	67.625
8	78.750	75.125



THOREN CAGING SYSTEMS INCORPORATED  
815 WEST SEVENTH STREET  
HAZLETON PENNSYLVANIA, 18201

MAXI-MISER MOBILE SYSTEM  
MODEL # 5-80-8-10-1-4-5BM  
(BOTTOM MOUNT BLOWER BOX)

DRAWN BY DRP  
CHECKED BY

SCALE  
DATE 21-NOV-95

DRAWING NO.  
151B



# MAXI-MISER<sup>®</sup>

## EXPANDED RAT CAGE AND LARGE MOUSE CAGE RACKS

Thoren Caging Systems Expanded Rat Cage and Large Mouse Cage Racks have been designed to allow the end user the flexibility of interchanging the cages in the unit. These systems have the same basic frame and design, when you have one system you have the potential for both. The reason this is possible is, because the cages have the same outer dimensions and are interchangeable within the rack. Both styles can be constructed as either a fixed or mobile unit. For ease in mobility, stainless steel casters are provided with grease fittings and optional wheel locks.

Depending on the style of rack system you select, the mobile cage station accommodates a maximum of 48 cage positions, utilizing 8 shelves and up to 6 cages per shelf. The fixed cage system provides a maximum of 72 cage positions for a single section, or 144 positions in a double rack. Racks have a maximum of 9 shelves and contain 8 cage positions per shelf, 4 cages on a side.

Any of these rack systems can be reduced in length and height to suit your specific needs (see dimensions on reverse side for more details on rack sizes).



*Model #8*

*Expanded Rat Cage*

*12.125"W x 16.00"L x 9.00"D*

*30.80cm x 40.60cm x 22.23cm*

*Cage Capacity: 2 to 8 rats*



*Model #10*

*Large Mouse Cage*

*12.125"W x 16.00"L x 6.250"D*

*30.80cm x 40.60cm x 15.88cm*

*Cage Capacity: 10 to 25 mice*

*Specifications Subject To Change Without Notice.*

**THOREN  
CAGING  
SYSTEMS**  
INCORPORATED

815 West Seventh Street • PO Box 586  
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[www.thoren.com](http://www.thoren.com)

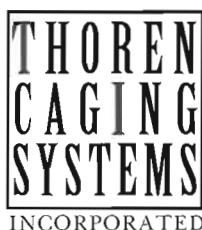
## EXPANDED RAT CAGE RACK

Model No.	No. Cages In Rack	No. Shelves In Rack	No. Cages In Shelf	Width	Length	Height*
8-36-6-6	36	6	6	28	59	81

## LARGE MOUSE CAGE RACK

Model No.	No. Cages In Rack	No. Shelves In Rack	No. Cages In Shelf	Width	Length	Height*
10-48-8-6	48	8	6	28	59	71

*\* Height does not include Blower modules.*



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[www.thoren.com](http://www.thoren.com)



# AVAILABLE CAGES



EXPANDED RAT CAGE (#8)  
18" X 12.125" X 9"



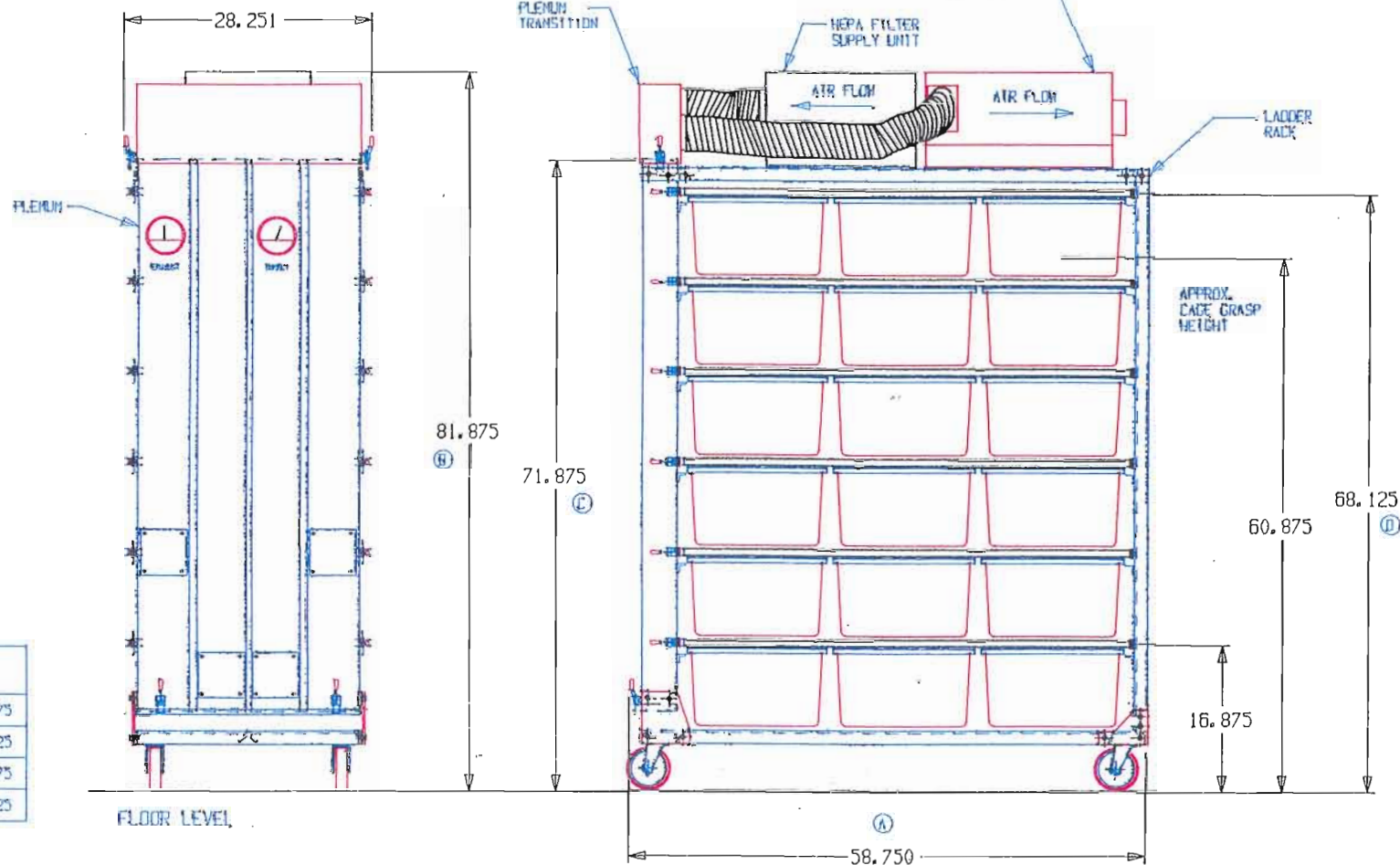
LARGE MOUSE CAGE (#10)  
18" X 12.125" X 6.375"

## LENGTH

NUMBER OF CAGES LONG	A
2	42.000
3	58.750

## HEIGHT

NUMBER OF SHELVES HIGH	B	C	D
3	51.125	41.125	37.375
4	61.375	51.375	47.625
5	71.625	61.625	57.875
6	81.875	71.875	68.125



TOTAL NUMBER OF EXPANDED RAT CAGES: 36

THOREN CAGING SYSTEMS INCORPORATED  
815 WEST SEVENTH STREET  
HAZLETON PENNSYLVANIA, 18201

MAXI-MISER MOBILE SYSTEM  
MODEL # 8-36-B-6-1-4-5TM  
(TOP MOUNT BLOWER BOX)

DRAWN BY DRP  
CHECKED BY

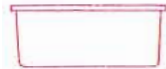
SCALE  
DATE 21-NOV-95

DRAWING NO.  
1532

# AVAILABLE CAGES



EXPANDED RAT CAGE (#89)  
18" X 12.125" X 9"



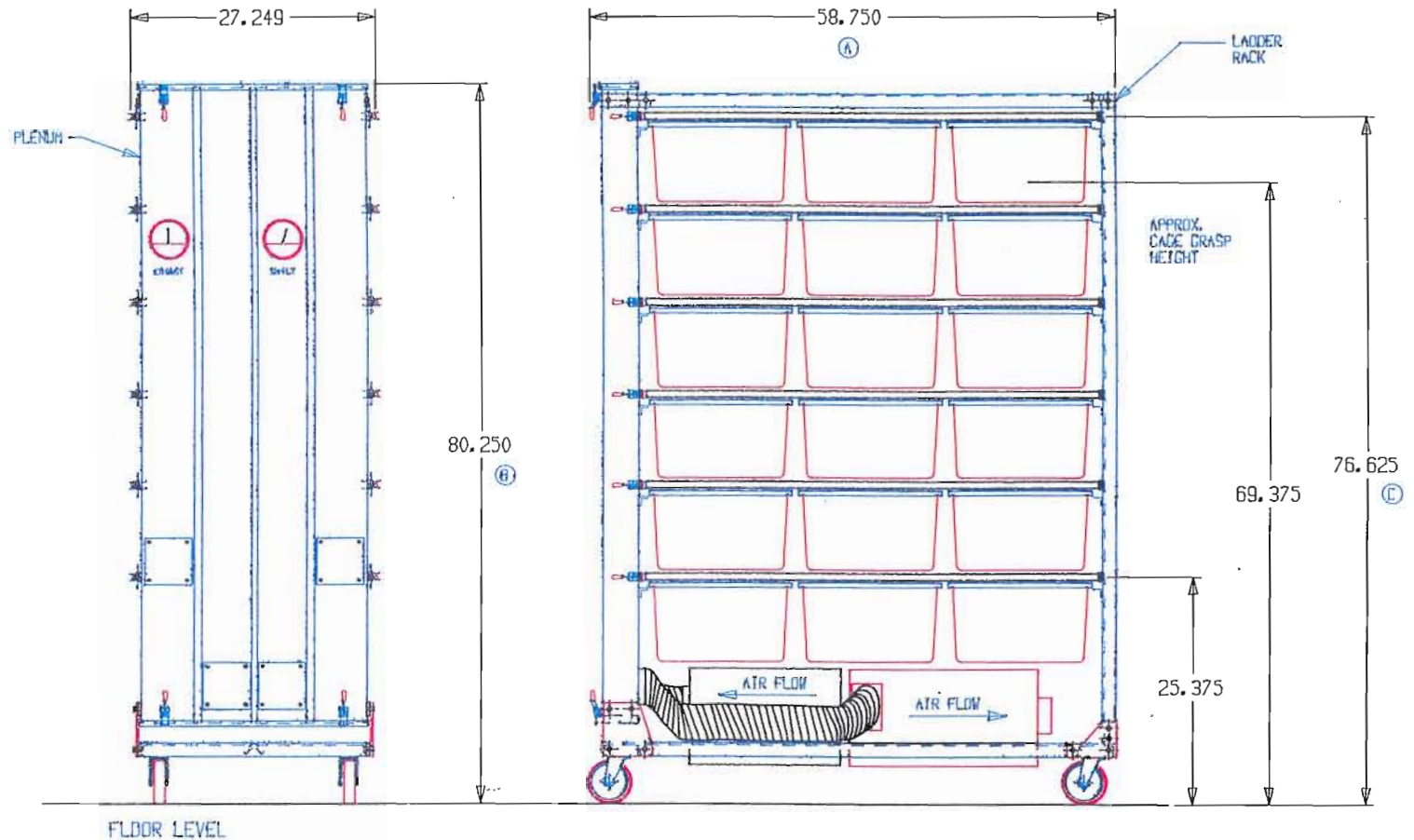
LARGE MOUSE CAGE (#100)  
18" X 12.125" X 8.375"

## LENGTH

NUMBER OF CAGES LONG	A
2	42.000
3	58.750

## HEIGHT

NUMBER OF SHELVES HIGH	B	C
3	49.500	45.875
4	58.750	56.125
5	70.000	66.375
6	80.250	76.625



THOREN CAGING SYSTEMS INCORPORATED  
815 WEST SEVENTH STREET  
HAZLETON PENNSYLVANIA, 18201

MAXI-MISER MOBILE SYSTEM  
MODEL # 8-36-6-6-1-4-58M  
(BOTTOM MOUNT BLOWER BOX)

DRAWN BY DRP  
CHECKED BY

SCALE  
DATE 21-NOV-95

DRAWING NO.  
1533



# MAXI-MISER<sup>®</sup>

## LARGE RAT CAGE RACK

Thoren Caging Systems Large Rat Cage Rack has been designed to allow maximum density housing of rats. Racks are built either as a mobile or fixed system.

Mobile racks have a maximum of 6 shelves, with 5 cages per shelf, total accommodations – 30 cages per rack. Fixed systems can accommodate a maximum of 9 shelves, with 5 cage positions per shelf – 45 cages per rack. Double racks hold a maximum of 90 cage positions. Either unit may be reduced in length and height to suit your specific needs (see dimensions below for more details on rack sizes).



*Model #6  
Large Rat Cage  
12.125"W x 23.375"L x 9.00"D  
30.80cm x 59.37cm x 22.86cm  
Cage Capacity: 1 to 12 rats*

### LARGE RAT CAGE RACK

Model No.	No. Cages In Rack	No. Shelves In Rack	No. Cages In Shelf	Width	Length	Height*
6-24-6-4	24	6	4	28	60	72
6-25-5-5	25	5	5	28	63	62
6-30-6-5	30	6	5	28	73	72

*\* Height does not include Blower modules.*

*Specifications Subject To Change Without Notice.*

**THOREN  
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INCORPORATED

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[www.thoren.com](http://www.thoren.com)

# AVAILABLE CAGES



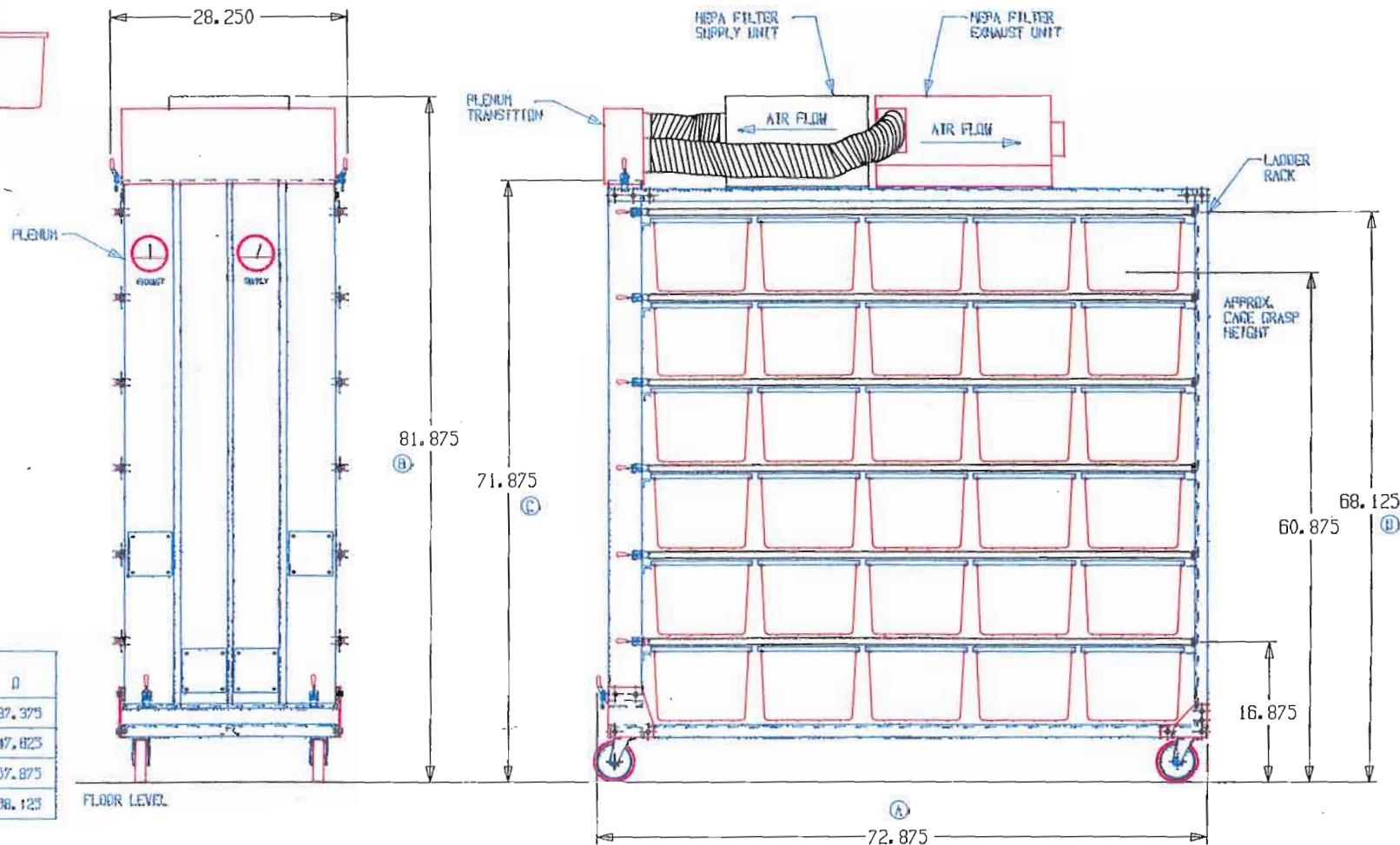
LARGE RAT CAGE (#6)  
12.125' X 23.875' X 9"

## LENGTH

NUMBER OF CAGES LONG	A
3	47.125
4	60.000
5	72.875

## HEIGHT

NUMBER OF SHELVES HIGH	B	C	D
3	31.125	41.125	37.375
4	61.375	51.375	47.625
5	71.625	81.625	57.875
6	81.875	71.875	68.125



TOTAL NUMBER OF LARGE RAT CAGES: 30

THOREN CAGING SYSTEMS INCORPORATED  
815 WEST SEVENTH STREET  
HAZLETON PENNSYLVANIA, 18201

MAXI-MISER MOBILE SYSTEM  
MODEL # 6-30-6-5-1-4-STM  
(TOP MOUNT BLOWER BOX)

DRAWN BY DRP  
CHECKED BY

SCALE  
DATE 21-NOV-95

DRAWING NO.  
1522



# AVAILABLE CAGES



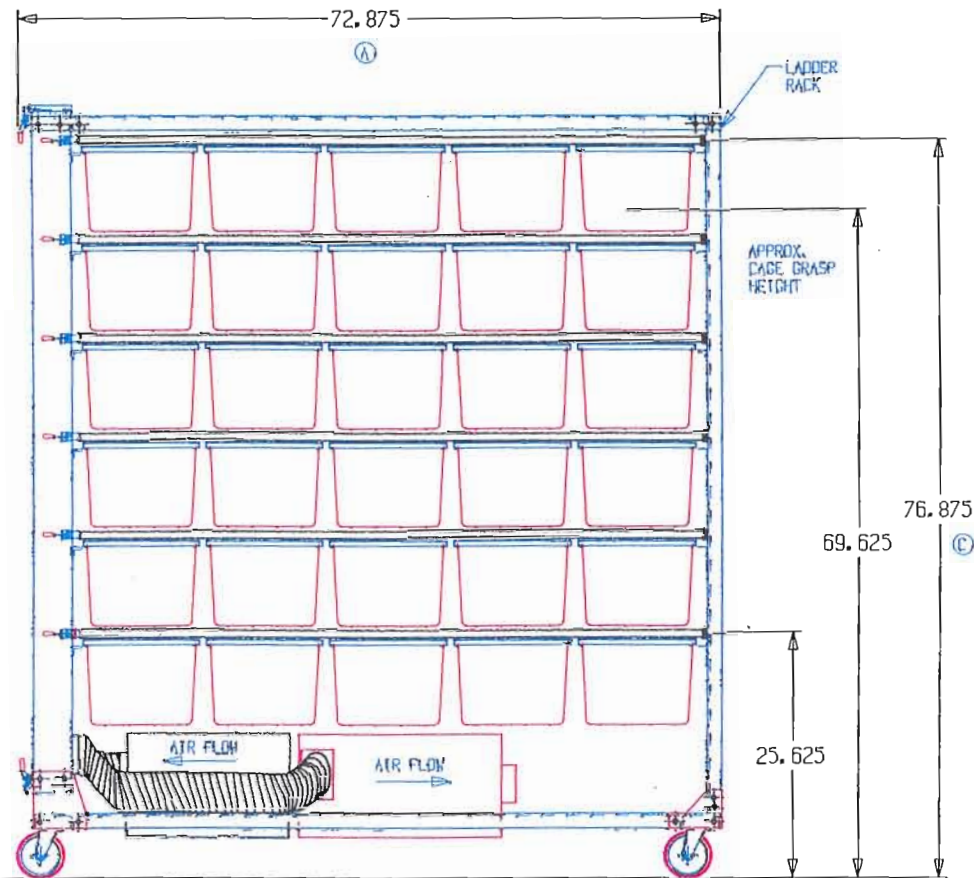
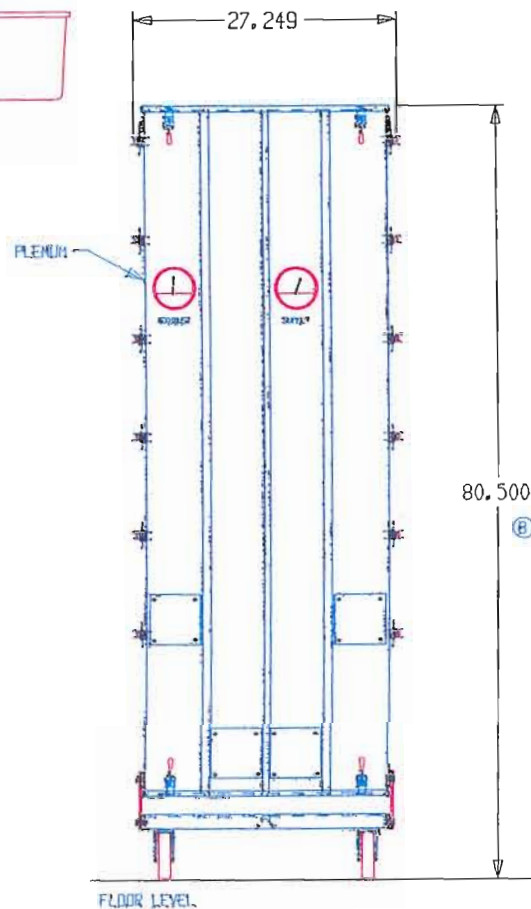
LARGE RAT CAGE  
12.125' X 23.875' X 9"

## LENGTH

NUMBER OF CAGES LONG	A
3	47.125
4	60.000
5	72.875

## HEIGHT

NUMBER OF SHELVES HIGH	B	C
3	49.750	48.125
4	60.000	58.375
5	70.250	68.625
6	80.500	78.875



TOTAL NUMBER OF LARGE RAT CAGES: 30

THOREN CAGING SYSTEMS INCORPORATED  
815 WEST SEVENTH STREET  
HAZLETON PENNSYLVANIA, 18201

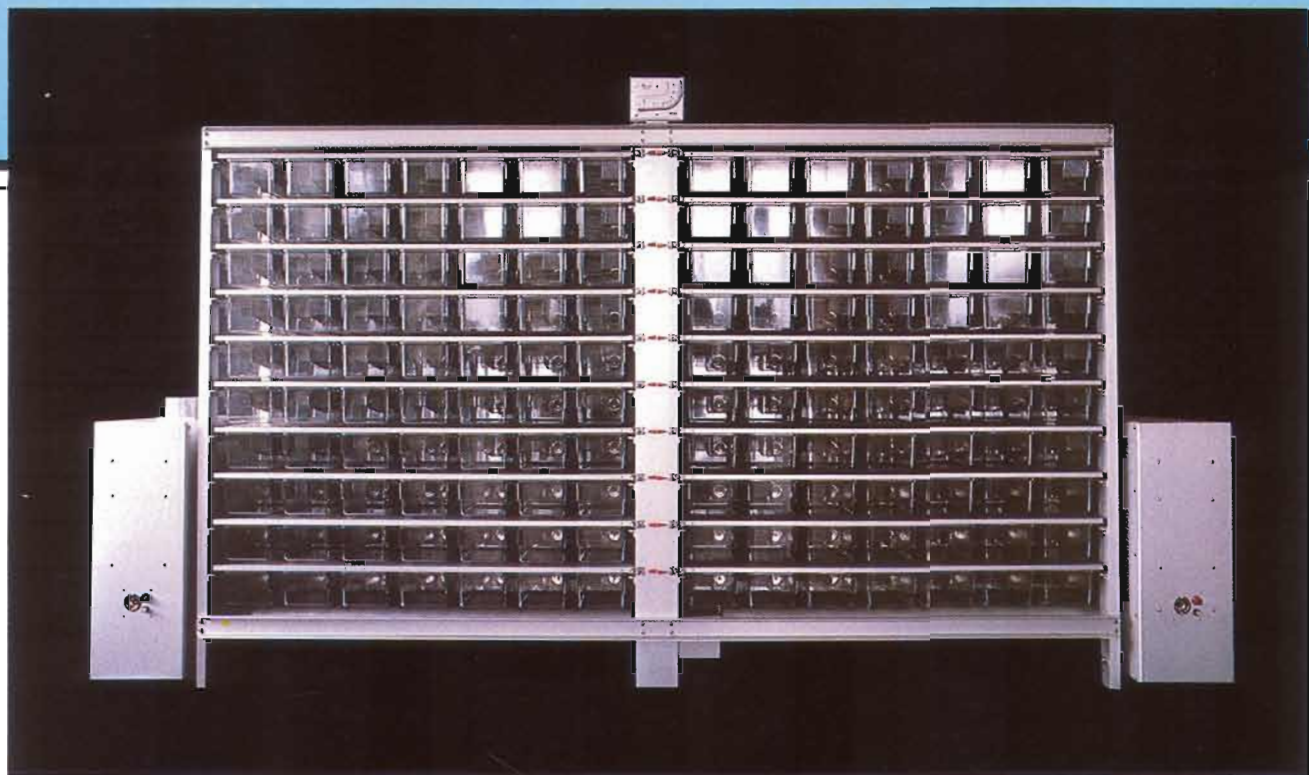
MAXI-MISER MOBILE SYSTEM  
MODEL # 6-30-6-5-4-4-50M  
(BOTTOM MOUNT BLOWER BOX)

DRAWN BY DRP  
CHECKED BY

SCALE:  
DATE: 2-11-09-95

DRAWING NO.  
1523

# THOREN CAGING SYSTEMS, INC.



## FIXED SYSTEMS

The "fixed system" Maxi-Miser Caging System is available using all four Thoren Cage designs: Small Mouse, Duplex, Weaning, and Rat. This system allows maximum density housing of rodents using a minimum of floor space. The fixed system is available in aluminum construction with bottle watering. (Stainless

steel construction and automatic watering can be provided, please call for details.) Units are available in either single bay or double bay construction and the double bay may utilize shelves of differing lengths to allow the overall length to match your existing room requirements.

### SMALL MOUSE CAGE RACK - FIXED - SINGLE SECTION

Model No.	No. Cages In Rack	No. Shelves In Rack	No. Cages In Shelf	Width	Length	Height	Min. CFM Required*
1-90-9-10	90	9	10	28	50.75	73	35
1-100-10-10	100	10	10	28	50.75	79.5	39
1-108-9-12	108	9	12	28	59	73	42
1-110-11-10	110	11	10	28	50.75	86	43
1-120-9-12	120	9	12	28	59	79.5	46
1-126-9-14	126	9	14	28	67.5	73	49
1-132-11-12	132	11	12	28	59	86	51
1-190-10-14	190	10	14	28	67.5	79.5	73
1-154-11-14	154	11	14	28	67.5	86	60

*\*Minimum CFM Required At .1" H<sub>2</sub>O Minimum Static Pressure For Central System Operation.*



## WEANING CAGE SYSTEM - FIXED - SINGLE SECTION

Model No.	No. Cages In Rack	No. Shelves In Rack	No. Cages In Shelf	Width	Length	Height	Min. CFM Required*
2-72-9-8	72	9	8	28	59	82	52
2-80-10-8	80	10	8	28	59	89.5	58
2-90-9-10	90	9	10	28	72.75	82	65
2-100-10-10	100	10	10	28	72.75	89.5	72

## DUPLEX CAGE SYSTEM - FIXED - SINGLE SECTION

Model No.	No. Cages In Rack	No. Shelves In Rack	No. Cages In Shelf	Width	Length	Height	Min. CFM Required*
3-72-9-8	72	9	8	28	59	82	52
3-80-10-8	80	10	8	28	59	89.5	58
3-90-9-10	90	9	10	28	72.75	82	65
3-100-10-10	100	10	10	28	72.75	89.5	72

## RAT CAGE SYSTEM - FIXED - SINGLE SECTION

Model No.	No. Cages In Rack	No. Shelves In Rack	No. Cages In Shelf	Width	Length	Height	Min. CFM Required*
4-64-8-8	64	8	8	28	59	82.5	56
4-72-9-8	72	9	8	28	59	91	64

## SMALL MOUSE CAGE SYSTEM - FIXED - DOUBLE SECTION

Model No.	No. Cages In Rack	No. Shelves In Rack	No. Cages In Shelf	Width	Length	Height	Min. CFM Required*
1-180-9-10	180	9	10	28	95.5	73	70
1-200-10-10	200	10	10	28	95.5	79.5	77
1-216-9-12	216	9	12	28	112.25	73	83
1-220-11-10	220	11	10	28	95.5	86	85
1-240-9-12	240	9	12	28	112.25	79.5	93
1-252-9-14	252	9	14	28	129	73	97
1-264-11-12	264	11	12	28	112.25	86	102
1-280-10-14	280	10	14	28	129	79.5	108
1-308-11-14	308	11	14	28	129	86	120

\*Minimum CFM Required At .1" H<sub>2</sub>O Minimum Static Pressure For Central System Operation.



*A Jackson Laboratory mouse room containing 19 triple section racks and one double section. Entire room houses, 6,490 weaning positions, to accommodate 84,370 mice. (photograph compliments of The Jackson Laboratory)*

## WEANING CAGE SYSTEM - FIXED - DOUBLE SECTION

Model No.	No. Cages In Rack	No. Shelves In Rack	No. Cages In Shelf	Width	Length	Height	Min. CFM Required*
2-108-9-6	108	9	6	28	88.25	82	78
2-120-10-6	120	10	6	28	88.25	89.5	87
2-144-9-8	144	9	8	28	113	82	104
2-160-10-8	160	10	8	28	113	89.5	116
2-180-9-10	180	9	10	28	139.5	82	130
2-200-10-10	200	10	10	28	139.5	89.5	144

## DUPLEX CAGE SYSTEM - FIXED - DOUBLE SECTION

Model No.	No. Cages In Rack	No. Shelves In Rack	No. Cages In Shelf	Width	Length	Height	Min. CFM Required*
3-108-9-6	108	9	6	28	88.25	82	78
3-120-10-6	120	10	6	28	88.25	89.5	87
3-144-9-8	144	9	8	28	113	82	104
3-160-10-8	160	10	8	28	113	89.5	116
3-180-9-10	180	9	10	28	139.5	82	130
3-200-10-10	200	10	10	28	139.5	89.5	144





*The Jackson Laboratory*

## RAT CAGE SYSTEM - FIXED - DOUBLE SECTION

Model No.	No. Cages In Rack	No. Shelves In Rack	No. Cages In Shelf	Width	Length	Height	Min. CFM Required*
4-96-8-6	96	8	6	28	88.25	82.5	85
4-108-9-6	108	9	6	28	88.25	91	96
4-128-8-8	128	8	8	28	113	82.5	114
4-144-9-8	144	9	8	28	113	91	128

*\*Minimum CFM Required At .1" H<sub>2</sub>O Minimum Static Pressure For Central System Operation.*

When ordering units, please specify which model you desire from the above selection. Once you have selected the size you need, represented by the model number listed, you will need to complete the number by selecting one item from the list under method of supply/exhausted air.

### METHOD OF SUPPLY/EXHAUSTED AIR

5. Blower/Filter Module
6. Transition For Central HVAC Connection
7. Hybrid Transition With HEPA Supply - HVAC Exhaust

Example For Completion Of Model Number:

Cage Selection	No. Of Positions	No. Of Shelves	No. Cages Per Shelf	Air Source
4	96	8	6	7



## **Maxi-Miser® Mobile Change Station**

The Maxi-Miser® Change Station is a unique unit capable of protecting the cage occupant from contaminated room air. It also protects staff members from air born impurities contained in the cages. The unit creates an air "barrier" at the work space opening, while allowing low velocity Class 100 air to wash the entire work area.

### **Dimensions:**

#### **Standard:**

32"W x 35"L x 71"H.

Work Area: 27" x 31"

#### **Large Change Stations:**

38" x 41" x 71"

Work Area: 33" x 37"

The front and rear openings are adjustable to suit the convenience of the operator. The rear panel, normally closed, can be open to allow access from both sides of the unit.

The front and rear panels are sloped for easy viewing of the work surface and the base unit is recessed on both sides for easy access and comfort for the operator.

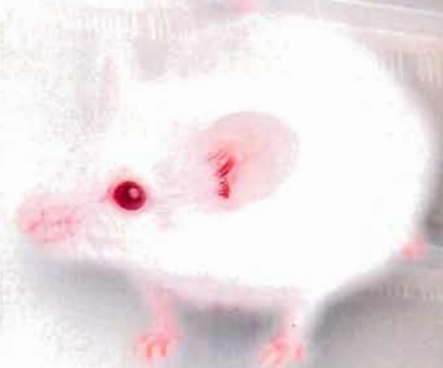
The hood is constructed from mar-resistant polycarbonate sheet to allow ambient light to illuminate the work surface and to allow a complete, unobstructed view of the work area.

Each unit has a 12" x 18" x 11-1/2" HEPA filter (99.99% efficient).

There are two pre-filters, one of which is 12" x 12" x 2" and is easily accessible from outside of the unit. The second filter, located under the work surface, is 12" x 24" x 2" and can be readily changed by removing the work surface.

Thoren Caging Systems  
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# MANUAL

## MAXI-MISER CAGING SYSTEMS

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Cage Materials	15
Air Exchange Rate	16

Thoren Caging Systems , Inc.  
815 West Seventh St.  
P.O.Box 586  
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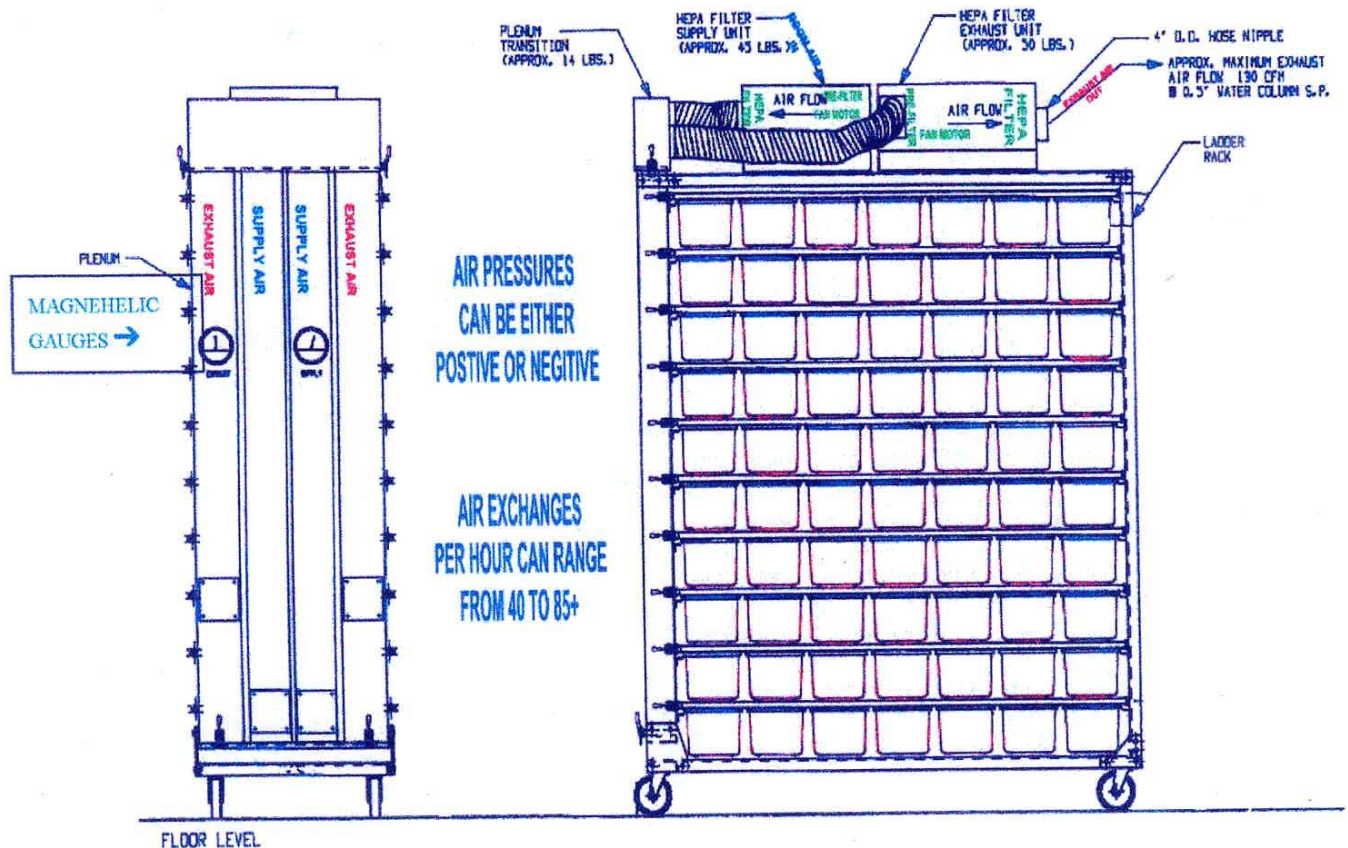
Lithgow Laboratory Services  
8414 W. Farm Rd #180-225  
Las Vegas, NV 89131  
Phone 702-413-0832  
Fax 702-363-4981

# INSTRUCTIONS

## MAXI-MISER CAGING SYSTEMS

The Maxi-Miser Caging System can be operated wither positive or negative to your room, depending on our specific needs. The positive mode offers protection to the animal housed in the system. The negative mode offers protection to the investigator.

### **DRAWING #1**

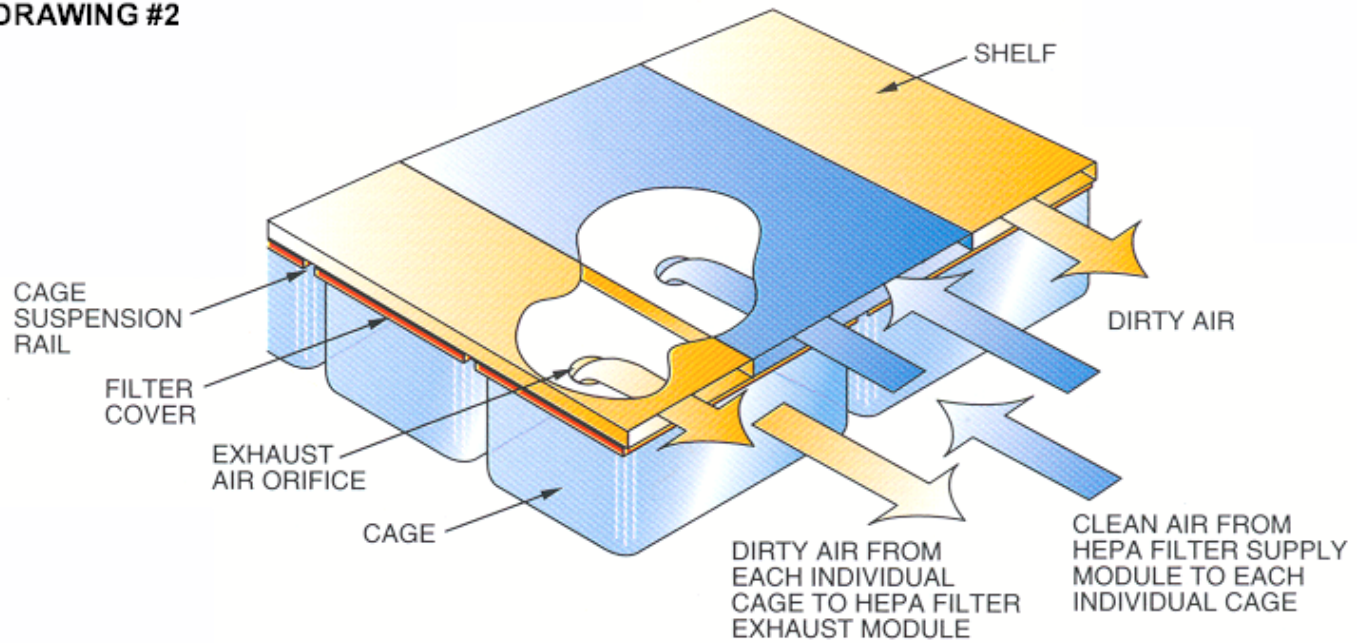


The system is constructed so that the inner two tubes of the plenum carry supply (clean) air and the outer two tubes of the plenum carry exhaust (spent) air.

Two magnehelics are provided on each rack to allow you to monitor the air pressure on both the supply air and the exhaust air relative to your room air. After placing the unit into the room in which it will be used, follow the instructions for the operating mode to meet your needs. (Either Positive or Negative pressures.)



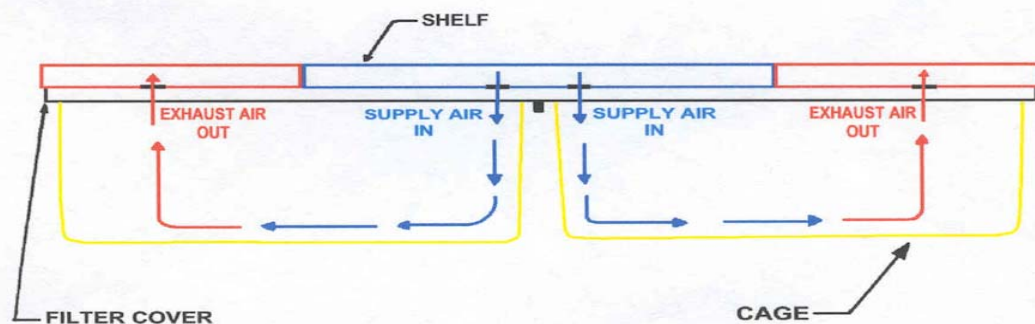
DRAWING #2



Each shelf is divided into three separate compartments. The inner section is the supply ( clean ) duct. The outer two sections are the exhaust ( spent ) ducts. ( See drawing # 2 above )

In each cage position there is an orifice hole for the supply and an orifice hole for the exhaust air . ( See drawing #3 below

DRAWING # 3



## **POSITIVE OPERATION - Product Protection**

**1. Zero the magnehelic gauges. (This must be done before the rack is running.) To do this, set the indicating needle exactly at the zero mark, using the zero adjust screw on the cover at the bottom of the magnehelic. (A small, straight blade screw driver works best.)**

**Note: In the United States you will connect to a 110 volt, 60 hertz, single phase receptacle, capable of providing 4 amperes. In the United Kingdom and other European Countries, you will connect to a 240 volt, 50 hertz, single phase receptacle, capable of providing 4 amperes.**

**3. To adjust the supply air, adjust the damper for the supply air until the supply magnehelic reads .30 inches of water column.**

**4. To adjust the exhaust air, adjust the damper for the exhaust air until the exhaust**



## **NEGATIVE OPERATION -People Protection**

- 1. Zero the magnehelic gauges. (This must be done before the rack is running.) To do this, set the indicating needle exactly at the zero mark, using the zero adjust screw on the cover at the bottom of the magnehelic. (A small, straight blade screw driver works best.)**
  
- 2. Connect the rack to the air source. The air source may be the central Heating, Air Conditioning, and Ventilating System (HVAC)(Option 6), the HEPA Filter/Blower Module(Option 5), or the Hybrid Transition (Option 7). Make certain that the flexible hoses are securely fastened to the hose connections with a stainless steel hose clamp. Insert the electrical plug into the wall receptacle, the units %vill be running as soon as the electrical connection is made.**
  
- 3. To adjust the supply air, adjust the damper for the supply air until the supply magnehelic reads .20 inches of water column.**
  
- 4. To adjust the exhaust air, adjust the damper for the exhaust air until the exhaust magnehelic reads .30 inches of water column.**
  
- 5. Allow the system to stabilize for twelve hours before introducing animals into the system.**

## **TROUBLE SHOOTING**

1. If you do not get sufficient static pressure on either the supply or the exhaust, check the following:
  - a. Make sure that the black rubber plugs on the ends of all the shelves are in place.
  - b. Be sure that the plates on the top and the bottom of the plenum are closed and clamped in place.
  - c. Check to be sure that the HEPA filters are securely tightened down with the four jack screws, which seal the fan transition to the HEPA Filter gasket.
  - d. Check to be sure that the HEPA Filter/Blower Module Cover Plates are securely fastened.
  - e. Check the hoses for tears or air leaks.
2. Do not under any circumstances adjust the air static pressure by turning the adjustment screw on the magnehelic.
3. If your unit is equipped with automatic watering, make certain that your bedding is of sufficient size, so that the rodents cannot stuff it into the valves. Also check your valves to assure that they are adjusted to the proper flow rate. (Contact the automatic watering manufacturer for this information. Edstrom Industries -(414) 534-5181. SE Lab Group - (513) 451-0530.)

**Thoren Caging Service# :** (570) 455-5041



## **HOW OFTEN TO WASH?**

**The question of how often to wash the Maxi-Miser Caging System is one that is often asked. The question of tear-down and thorough cleaning has become a matter of personal preference. The actual air supply and exhaust ducts are internal surfaces, which do not come in contact with ambient room air. These internal surfaces can be cultured on a weekly basis to determine the necessity for total tear down. The outer surfaces of the rack should be wiped down every time the cage is changed with a commercially available sterilant of your choice. When the cage has been removed from the system, the shelf area above that cage should be disinfected, as well as, the shelf area below the cage. Keep in mind that even stainless steel may be attacked by either strongly acidic or strongly alkaline compounds.**

## **HEPA FILTER/BLOWER MODULE**

### **FREESTANDING, TOP MOUNTED, BOTTOM MOUNTED**

The HEPA Filter/Blower Module is the unit which contains HEPA Filters for both the supply air and the exhaust air. The service time of the filters depends on the cleanliness of the air source. When a filter becomes dirty, you will notice a pressure drop on your magnehelic gauge. You may compensate by opening the dampers on both the supply and the exhaust to maintain your static pressure, but we recommend that you replace your filters as soon as an uncorrectable pressure drop is detected. The Prefilters should be visually inspected on a weekly basis for dirt and clogging. By maintaining the Prefilters in good condition, you will substantially extend the life of your HEPA filters. HEPA Filters usually last five to six years, if the Prefilters have been maintained.

The HEPA Filter/Blower Module is actually two completely separate unit. Each unit has a refilter, fan, and a HEPA Filter. The actual assembly drawings for each unit are attached. The Top Mounted and Bottom Mounted Supply Module is Drawing Number 3000-1. The Exhaust Module for these units is Drawing Number 3000-2. The Free Standing Module is Drawing Number 3002.

The prefilters are accessible by removing the small prefilter Cover plate from the units and sliding the prefilter out. The prefilters in the Top Mounted and Bottom Mounted Modules are washable and autoclavable. The prefilters in the Free Standing Module are disposable.

The HEPA Filters and the fans are accessible by removing the cover plates on both boxes. This is accomplished by removing the wing nuts (in the E.C. these are cap nuts) from the box. To remove the HEPA filters you must remove the cover plates, then loosen the four wing nuts which hold the fan in compression with the HEPA Filter. There are two wing nuts at the top of the filter and two at the bottom. When the four wing nuts are loose, slide the fan and fan transition (as one unit) out of the box and then remove the HEPA Filter. Reverse the procedure to reassemble, always making sure that the air flow direction and HEPA Filter direction are correct. (Air flow direction is away from the fan; HEPA Filter separators should be vertical.)

Always change the prefilter when changing HEPA cartridges. We recommend washing the HEPA Filter/Blower Module when changing HEPA Filters. To wash the units you must remove the electrical box by removing the four screws that hold it in place, the prefilter, the HEPA Filter, and the fan, mounted on the fan transition. The Module then can be washed and autoclaved.

## **WASHING and AUTOCLAVING**

The Maxi-Miser Caging System can be washed and autoclaved with the exception of the Magnehelic Gauges, the fans, the prefilters ( in the free standing module and the Hybrid Supply Module), the HEPA filters, and the electrical components.

- I. To wash the Maxi-Miser Caging System unplug the system and remove the air source from the rack.
  
2. As with any caging system, the cages, cage covers, filter covers, water bottles and cardholders should be removed and washed as separate items.
  
3. The magnehelic Gauges are not washable and must be removed from the plenum. This is easily done by removing the nut and lock washer from the stem of the magnehelic, which holds it in place in the plenum. The supply magnehelic gauge and the exhaust magnehelic gauge have the stem fitting in different ports, you will not be able to put the gauges back improperly, as the stems will not line up with the holes in the plenum.
  
4. Each shelf of the system is held in place with two red or gray handled clamps, these clamps must be opened and the shelf removed from the rack for thorough cleaning. The red shelf gasket and the black shelf plug should be removed from the shelf and can be washed separately. The shelf can now be placed in a washer to be sanitized. For ease of handling, a Shelf Wash Rack is available to handle nine shelves, nine gaskets, and nine plugs.
  
5. The rack plenum has a clean-out plate on the bottom which is held in place with clamps, this plate must be opened to allow cleaning. Racks with free-standing HEPA Filter/Blower Modules or bottom-mounted HEPA Filter/Blower Modules will have a clean-out plate on the top as well, this must also be opened. The structural frame (consisting of the main air plenum, the ladder frame, the stringers, and the bottom frame with



## **How to wash the HEPA Filter/Blower Module:**

- 1. Unplug the unit and disconnect the hoses which connect the unit to the rack.**
- 2. Remove the two prefilters using the access panels on the unit.**
- 3. Remove the main access panels from the module using the wing nuts (cap nuts in E.C.)**
- 4. Loosen the four wing nuts that hold the fan transition in compression with the HEPA Filter in both the Supply Box and the Exhaust Box.**
- 5. Unplug the fans and slide the fans, attached to the fan transitions, out of the boxes.**
- 6. Remove the HEPA Filters from the units and discard of them properly.**
- 7. Remove the electrical boxes from the modules by taking out the four screws that hold them in place.**
- 8. You may now wash and autoclave the stainless steel enclosures.**
- 9. When totally dry, reassemble the unit by reversing the steps listed above. Be sure that the HEPA Filters are placed in their proper operating position (check air flow direction and make sure that the proper side is up). Make sure that the four wing nuts seal the fan transition to the HEPA Filter are securely fastened. Reassemble the cover plates making sure that the proper plate is on the proper box. Test the filter seals with DOP.**

## **HYBRID TRANSITION WITH OPTIONAL EXHAUST FAN**

The Hybrid Transition consists of a HEPA Filtered Supply Module, which is mounted on top of the rack, and a Transition, which allows you to connect the Supply Module to the Rack Supply and the Rack Exhaust to the central Heating, Air Conditioning, and Ventilating (HVAC) System. Both components of the Hybrid Transition are constructed of stainless steel and can be washed and autoclaved. The Hybrid Supply Module is shown in Drawing Number 3005-1. The optional Exhaust Fan Booster is shown in Drawing 3005-2.

The HEPA Filtered Supply Module contains a prefilter, a fan, and a 12"x 12"x 11-1/2" HEPA Filter. The prefilter for the Supply Module is 12"x 12"x 2" and is located at the back of the unit. The prefilter is accessible by loosening the wing nut on the retainer bar and swinging the bar upward. The prefilter should be visually inspected every week for signs of clogging. By maintaining the prefilter in good condition, you will substantially extend the life of the HEPA Filter. The HEPA Filter and fan are accessible by removing the cover plate from the top of the module. To remove the HEPA Filter you must remove the cover plate, then remove the four wing nuts that hold the fan in compression with the HEPA Filter. Slide the fan, attached to the fan transition, away from the HEPA Filter and remove it from the module. Then slide the HEPA Filter away from the threaded rods which hold it in place and remove it from the module. Reverse the procedure to reassemble, always making sure that the air flow direction and HEPA Filter direction are correct. (Air flow is away from the fan; HEPA Filter separators should be vertical.

Always change the prefilter when changing the HEPA cartridge. We recommend washing the HEPA Filtered Supply Module when changing the HEPA Filter.

### **To wash the HEPA Filtered Supply Module**

1. Unplug the unit from the wall receptacle and disconnect the hose which connects the unit to the transition. If you have the optional Exhaust Fan Booster or the alarm unplug these as well.
2. Remove the prefilter by swinging the retainer bar, which holds the prefilter in place, upward.
3. Remove the cover plate from the top of the unit by using the wing nuts.
4. Remove the four wing nuts from the threaded rod that holds the fan in compression with the HEPA Filter.
5. Unplug the fan and slide the fan, attached to the fan transition, out of the module.

6. Remove the HEPA Filter from the unit and discard of it properly.
7. Remove the electrical box, containing the circuit breakers, from the side of the module, by removing the four screws that secure it to the module.
8. You may now wash and autoclave the stainless steel box enclosure.
9. When totally dry, reassemble the unit by reversing the steps listed above. Be sure that the HEPA Filters are placed in their proper operating position (check air flow direction and make sure that the proper side is up). Make sure that the four wing nuts that seal the fan transition to the HEPA Filter are tightened. Test the filter seal with DOP.

The transition which allows you to connect the Supply Module to the Rack Supply and the Exhaust to the central HVAC, can be removed from the rack by unlatching the two clamps, which hold it in place. If you have the optional Exhaust Fan Booster on your unit, you must remove this from the transition by using the four hex head bolts, which hold it in place.



## **AUTOCLAVING**

The Maxi-Miser Caging System can be autoclaved, each component of the system will be listed separately with instructions to help you to autoclave them most effectively.

**The Maxi-Miser Rack** - is constructed from stainless steel and can be autoclaved with the exception of the magnehelic gauges. The magnehelic gauges can easily be removed by loosening the nut from the stem that holds the gauge to the plenum. To thoroughly clean the rack, the rack should be disassembled per the instructions on rack washing.

**The Air Sources** (HEPA Filter/Blower Modules, Transitions and Hybrid Transitions) - are constructed from stainless steel and can be autoclaved, but you must first remove the prefilters, the HEPA Filters, and the electrical components. Please follow the instructions for each particular piece of equipment for disassembly and cleaning.

**Cages** - the standard Thoren cage is molded from high heat polycarbonate, which is autoclavable at 270° F. Polycarbonate (Lexan or Makrolon) has an autoclave life of approximately twenty cycles at 250° F. High Heat Polycarbonate (PPC or APEC) is autoclavable to 270° F and has an autoclavable life of approximately fifty cycles. Ultem or PSF have an autoclave life of hundreds of cycles at 270° F and are a better choice for facilities who must autoclave on a weekly or biweekly basis. To maximize the performance of your plastic cages it is best to use as short an autoclave cycle as possible. Cages to be autoclaved should not be subjected to mechanical loading during sterilization. (Mechanical Loading is stacking cage set-ups on top of one another so that the bottom cage has excessive weight on it.) The quality of the steam provided to the autoclave is important to the success of the autoclave cycle. Chemicals present in the steam (ie. water conditioning additives and boiler additives) can attack your plastic cages causing premature cage failure. Soap residue or chemical residue on cages which are autoclaved will also cause premature failure, as the autoclave accentuates the action of these incompatible materials on the cage and will cause cracking, crazing, and discoloration. The practice of placing bedding into the cages to be autoclaved can be detrimental to the cage, as some beddings, when autoclaved, release chemicals which attack the resin. The practice of marking cages with a marker can also be detrimental to cages, many markers contain solvent which chemically attacks resins.

**Stainless Steel Cardholders** - are constructed from stainless steel and can be autoclaved. Two types of cardholders are available either the hoof; for use with punched cards or a vertical/horizontal cardholder for use with 3"x 5" cards. Thoren also offers molded cardholders manufactured from the same resins as the cage. The plastic cardholders are attached to the cage and can be washed and autoclaved following the same protocol as the cages.

**Stainless Steel Cage Covers** - are constructed from stainless steel wire bar and can be autoclaved with no problems. The Thoren Cage Covers have a few unique

**Bottles** - are molded from glass, high heat polycarbonate, or PSF and can be autoclaved with the exception of the "drilled" glass bottle. If you want to use the "drilled" bottles and must autoclave, the polycarbonate or PSF bottles are the bottles to use. Thoren offers a variety of stoppers (neoprene or silicone), stainless steel caps, or plastic disposable caps for the bottles. The stoppers are washable and autoclavable, as are the stainless steel cap. The plastic disposable caps can be washed, but not autoclaved.

features - every Thoren cover has a tag bar/handle so that the cover can be handled from the top without ever touching the underside of the cover. The Bottle Covers have a grommet which protects the stopper or cap from the rodent's gnawing. All Thoren Cage Covers have dimpled panels to allow thorough cleaning.

# THOREN CAGING SYSTEMS, INC.

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## AVAILABLE CAGE SIZES

Model #	Description	Dimensions Inches Centimeters	Floor Area Square Inches Square Centimeters
1	Small Mouse Cage	7.70 x 12.17 x 5.250 19.56 x 30.91 x 13.34	67.6 435.7
2	Weaning Cage	12.125 x 12.125 x 5.625 30.80 x 30.80 x 14.29	112.9 727.8
3	Duplex Cage	12.125x12.125 x 5.53 30.80 x 30.80 x 14.05	51.7 333.6
4	Rat Cage	12.125x12.125 x 7.370 30.80 x 30.80 x 18.72	115.1 742.4
5	Expanded Small Mouse Cage	8.75 x 12.125 x 6.395 22.2 x 30.80 x 16.24	78.1 503.7
6	Large Rat Cage	12.125x 23.375 x 9.00 30.80 x 59.37x 22.86	216.0 1,393.2
7	Single Rat Cage	8.75 x12.125 x 8.750 30.80x 22.23 x 22.23	73.3 474.3
8	Expanded Rat Cage	12.125x 16.00x9.00 30.80x40.60x22.23	146.5 944.9
9	Small Mouse II Cage	7.70x12.17 x 5.875 19.56 x30.92 x 14.93	67.0 435.7
10	Large Mouse Cage	12.125 x 16.00x6.350 30.80 x 40.60 x 15.88	152.7 984.9
11	Duplex II Cage	12.125x12.125x6.395 30.80 x30.80 x 16.24	51.7 333.6
15	Single Mouse Cage	8.75 x 12.125 x 6.395 22.2 x 30.80 x 16.24	33.0 212.9
19	Model #19	7.75 x 13.625 x 5.675 19.56 x 34.70 x 14.41	78.0 503.7

- Note 1 -**
- \*Models # 2,3,4, and 11 are interchangeable
  - \*Model # 5, 7, and 15 are interchangeable
  - \*Model # 1 and 9 are interchangeable
  - \*Model # 8 and 10 are interchangeable
- Note 2 -** Sizes are average approximate dimensions. Dimensional variance will be caused by differential shrinkage dependant upon specific resins
- Note 3 -** Floor Area is measured with 1/2" bedding or wire bar floor in the cage.

MAXI-MISER CAGING SYSTEMS - SPACE SAVER CAGES



THOREN CAGING SYSTEMS,  
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Materials offered for cages:

PPC (20) High heat Polycarbonate  
Udel (200) Polysulfone  
Radel (1000) Polyphenylsulfon

**PPC - High heat polycarbonate cages.( Standard Cage)**

1987 - HIGH HEAT POLYCARBONATE PPC® (Polyphthalate carbonate) manufactured by GE) was designed for increased heat resistance. This allowed the use of autoclave *temperatures to 270°F (132°C)* with an Izod Impact Strength of 10. The original manufacturer's recommendations said that these resins were good for 100 autoclave cycles, however, these recommendations have now been reduced to 20 cycles. This resin offer limited chemical resistance.

**Udel® Cages:**

1994 - UdelO, polysulfone, was introduced by Amoco. This light amber resin allowed high continuous use of heat but offered a lower Izod impact strength (1.5). Autoclave cycles, approximately 200 cycles Udel®, cages are now offered at the same price as High heat *polycarbonate*. Thoren bottles are now also manufactured from Udel.

**Radel® Cages.**

Cages available in Radel® Model # 1 and # 9 and Model # 5

1995 - Radel RO was introduced by Amoco. Polyphenylsulfone offers high temperature resistance with good chemical resistance and excellent impact strength (13).  
( Special pricing )

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Air Exchange Rate Information

Thoren Caging Systems, Inc. utilizes the Bruel and Kjaer 7620 to measure the decay of a **tracer gas in the cage. We measure the concentration levels of sulfur hexafluoride tracer gas at various static pressures that the Maxi- Miser Caging System normally operates at.**

The graph above represents the actual readings from the BK 7620 and the air exchange rate in cage changes per hour at specific pressures in inches of water column.

